

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A swing clamp for selectively clamping a workpiece having a surface to be worked upon to a support surface, the swing clamp comprising:

- (a) a housing;
- (b) a clamp arm; and
- (c) an actuator coupled to the clamp arm for moving the clamp arm between a clamped position, an unclamped position, and a retracted position, when in said retracted position said clamp arm is disposed below the elevation of the surface to be worked upon.

2. The swing clamp of Claim 1, wherein the clamp arm is both linearly and rotatably displaced when moved between the clamped and retracted positions.

3. The swing clamp of Claim 1, wherein the clamp arm is displaced such that a distal end of the clamp arm travels along a path having a substantially linear portion and an arcuate portion when the clamp arm is moved between the unclamped and retracted positions.

4. The swing clamp of Claim 1, wherein the clamp arm rotates approximately 180 degrees in one direction when the clamp arm is moved from the clamped position to the retracted position and back to the clamped position.

5. The swing clamp of Claim 1, wherein the clamp arm rotates approximately 360 degrees in one direction when the clamp arm is moved from the clamped position to the retracted position and back to the clamped position.

6. The swing clamp of Claim 1, wherein when the clamp arm is in the retracted position, the clamp arm is disposed below the elevation of the support surface.

7. The swing clamp of Claim 1, wherein when the clamp arm is in the retracted position, the clamp arm is disposed substantially within a recess in the housing.

8. The swing clamp of Claim 1, further comprising a cam assembly disposed at least partially within the housing, the cam assembly comprising a cam follower and a cam network, the cam follower interfacing with the cam network to guide the movement of the clamp arm between the clamped, unclamped, and retracted positions.

9. The swing clamp of Claim 8, wherein the cam network is comprised of at least one branched cam having a first portion that branches to a first branch and a second branch.

10. The swing clamp of Claim 9, wherein the first portion of the branched cam is substantially linear in shape and the branches of the branched cam are substantially arcuate in shape.

11. The swing clamp of Claim 8, wherein the cam network is comprised of a plurality of branched cams each having a first portion that branches to a first branch and a second branch, the branches of each branched cam joining the branches of an adjacent branched cam.

12. The swing clamp of Claim 1, wherein when the clamp arm is located at: (i) the clamped position, the clamp arm is at a first elevation; (ii) the unclamped position, the clamp arm is at a second elevation greater than the first elevation; and (iii) the retracted position, the clamp arm is at a third elevation less than the first elevation.

13. The swing clamp of Claim 1, wherein the clamp arm includes a first arm and a second arm, each arm adapted to engage and clamp the workpiece.

14. The swing clamp of Claim 13, wherein the first arm is oriented in a first direction and the second arm is oriented in a second direction substantially opposite the first direction.

15. A swing clamp for selectively clamping a workpiece having a surface to be worked upon to a support surface, the swing clamp comprising:

- (a) a housing;
- (b) a clamp arm having a first arm and a second arm; and

(c) an actuator coupled to the clamp arm for moving the clamp arm between a first clamped position in which the first arm is adapted to clamp the workpiece to the support surface, a second clamped position in which the second arm is adapted to clamp the workpiece to the support surface, and an unclamped position.

16. The swing clamp of Claim 15, wherein the clamp arm rotates in a first direction when moving from the first clamped position to the unclamped position and further in the first direction when moving from the unclamped position to the second clamped position.

17. The swing clamp of Claim 15, wherein the first arm extends in a first direction and the second arm extends in a second direction substantially opposite the first direction.

18. The swing clamp of Claim 15, wherein the actuator further moves the clamp arm to a retracted position wherein the clamp arm is disposed below the elevation of the surface to be worked upon.

19. A swing clamp for selectively clamping a workpiece having a surface to be worked upon to a support surface, the swing clamp comprising:

- (a) a housing;
- (b) a clamp arm; and
- (c) an actuator coupled to the clamp arm, said actuator includes a cam assembly disposed at least partially within the housing, the cam assembly comprising:
 - (i) a branched cam having a first portion which branches to a first branch and a second branch; and
 - (ii) a cam follower adapted to interface with the branched cam for guiding the movement of the clamp arm between a first position and a second position.

20. The swing clamp of Claim 19, wherein the cam assembly is comprised of a plurality of branched cams each having a first portion which branches to a first branch and a second branch, the branches of each branched cam joining the branches of an adjacent branched cam.

21. The swing clamp of Claim 19, wherein the first portion of the branched cam is substantially linear in shape and the branches of the branched cam are substantially arcuate in shape.

22. The swing clamp of Claim 19, wherein the branched cam is disposed in a shaft that forms part of the actuator.

23. The swing clamp of Claim 19, wherein the branched cam is formed by a groove.